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(71) Applicant(s)
Telefonaktiebolaget LM Ericsson
(Incorporated in Sweden)
S-126 25 Stockholm, Sweden

(72) Inventor(s)
Jan Oom
Bo Kvarström
Mikael Ragnar
Ove Linnell

(74) Agent and/or Address for Service
Haseltine Lake & Co
Imperial House, 15-19 Kingsway, LONDON,
WC2B 6UD, United Kingdom

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G07F 7/08

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EP 0831438 A2 WO 97/04609 A1 WO 96/32700 A1

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(54) Abstract Title
Method of loading a cash card using a mobile phone

(57) A method of loading electronic cash onto a standard cash card, e.g. a smart card or magnetic strip card, comprises inserting the cash card into a slot provided in a mobile communications device (MCD) S11, establishing a communications path between the MCD and a financial service provider (FSP) S12, confirming the identity of the user of the MCD to the FSP S13, e.g. by entering a PIN via the MCD, and transferring electronic cash from the FSP to the cash card S15. Preferably the MCD is a conventional mobile phone (Figure 1), the communications path is established over a satellite or cellular phone network, and the MCD has a smart card reader (12, Figure 1) for reading and writing data from and to the cash card. The FSP may be a bank or may alternatively be another user having a second cash card inserted into a second MCD (Figure 3).

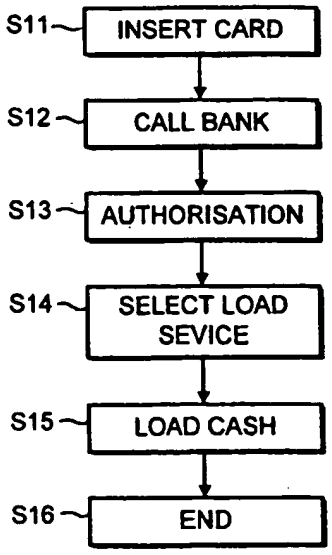

FIG. 2

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At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

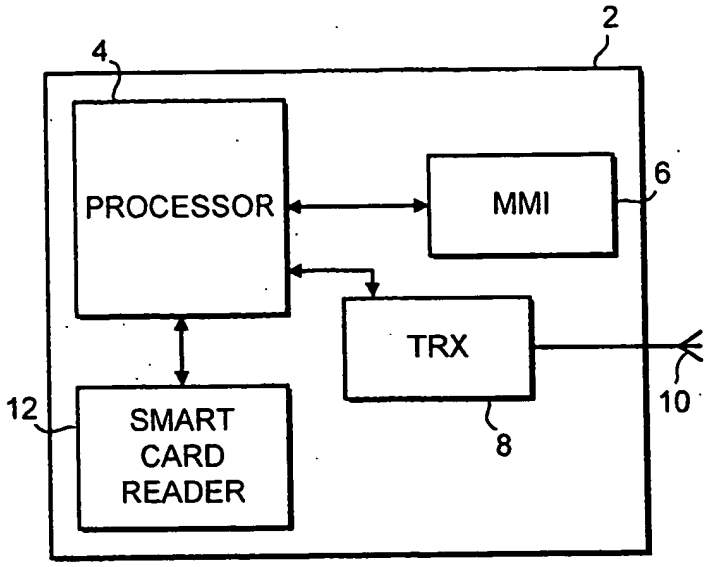
2
4
PROCESSOR
MMI
6
TRX
10
8
12
SMART CARD READER

FIG. 1

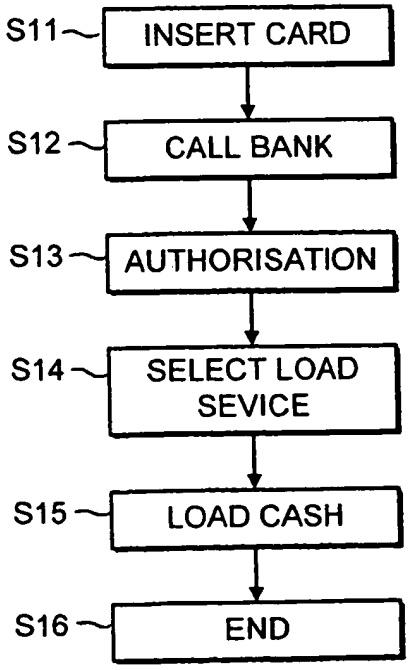
S11
INSERT CARD
S12
CALL BANK
S13
AUTHORISATION
S14
SELECT LOAD SEVICE
S15
LOAD CASH
S16
END

FIG. 2

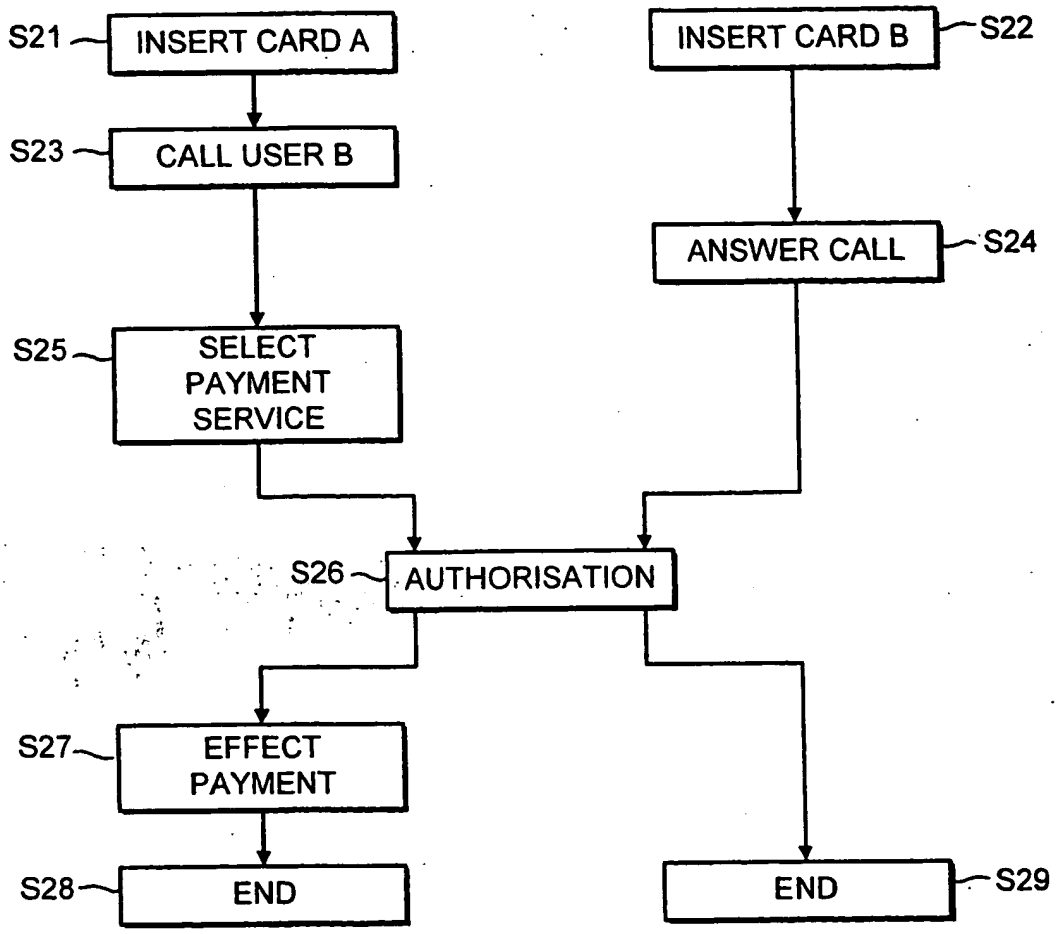
S21
INSERT CARD A
INSERT CARD B
S22
S23
CALL USER B
ANSWER CALL
S24
S25
SELECT PAYMENT SERVICE
S26
AUTHORISATION
S27
EFFECT PAYMENT
S28
END
END
S29

FIG. 3

MOBILE COMMUNICATIONS DEVICE

TECHNICAL FIELD OF THE INVENTION

This invention relates to a mobile communications device, and in particular to a mobile communications device suitable for use in performing financial transactions, and to a method of performing such transactions.

BACKGROUND OF THE INVENTION

Proposals have been made for various forms of electronic financial transactions, in which value is transferred from one user to another user to be held electronically, for example on so-called smart cards.

The present invention relates to a system for performing such transactions using a mobile communications device.

WO96/25828 discloses a method for performing financial transactions using a mobile station. A cash card application is carried on an application module, which can be inserted into a slot in a mobile station. When the module is inserted in the slot, the cash card application is available for use by a user of the mobile station.

When the cash card application is available, it can be used for financial transactions. For example, electronic cash can be loaded onto the application from a user's bank account, after establishment of a communications link between the mobile station and a computer in the bank. Further, again when the cash card application module has been inserted into a slot in a mobile station, a data transfer link, for example based on infrared or other remote methods of data transfer, can then be established with a payment terminal, for example at a retailer's premises, allowing cash stored on the application to be used for making payments.

SUMMARY OF THE INVENTION

In accordance with a preferred aspect of the invention, a standard cash card, namely one which can be used in a variety of financial transactions, can be inserted into a slot in a mobile communications device, which may for example be in the form of a mobile phone. After establishing a communications path between the mobile communications device and a financial services provider, and confirming by means of an authorisation procedure that a user of the device is authorised to perform transactions, value can be transferred from the financial services provider, for example from an account held by the user, to be stored on the cash card.

The card can then be removed from the mobile communications device, and used in a conventional way, for example in transaction payments.

This has the advantage that the mobile communications device is used as a mobile terminal at which value can be loaded onto the cash card, thereby avoiding the need for the user to visit a static terminal.

According to a second preferred aspect of the invention, a mobile communications device is provided with a slot for insertion of a standard cash card, and means for transferring data to and from a card inserted in the slot.

Such a device has the advantage that it avoids the need for the user to find and visit a static terminal to be able to use the cash card.

BRIEF DESCRIPTION OF DRAWINGS

Figure 1 is a block schematic diagram of a mobile phone in accordance with the invention.

Figure 2 is a flow chart showing the progress of a first transaction carried out in connection with an aspect of the invention.

Figure 3 is a flow chart showing a second

financial transaction carried out in accordance with an aspect of the invention.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Figure 1 shows a mobile phone in accordance with the invention. The phone 2, as is conventional, includes a processor 4 and associated circuitry, and a MMI 6, for example in the form of a keypad allowing the user to input data and a display for providing messages to the user. The phone 2 also includes transceiver circuitry 8, connected to an antenna 10 provided on the exterior of the phone 2, for communicating with a communications network. For example, in the case of a cellular phone, communications are made via a network base station, while, if the phone 2 is a satellite phone, communications are made with a satellite-based transceiver. Other features of the phone are conventional, and not relevant to an explanation of the present invention, and are not described further herein.

The phone 2 also includes a smart card reader 12, which is connected to the processor 4.

The smart card reader 12 preferably takes the form of a slot provided in an external surface of the phone 2, into which a card can be inserted. Further, the smart card reader 12 comprises means for reading data from a card inserted into the slot.

An important aspect of the invention is that the card which is to be read is a standard card, which can be used away from the phone in financial transactions.

The card reader 12 is a smart card reader, capable of reading data electronically off a card which includes a processor and electronic memory devices. However, the card may for example be a magnetic strip card, in which case the card reader which is to be used must be capable of detecting data stored in such a device.

However, what is important is that the phone is provided with suitable means for reading data from, and transferring data to, a standard card which can be used in a variety of other locations. For example, the card may be able to be used in static cash machines, and various retail locations, and other locations where payments are made.

The smart card reader, as mentioned above, is connected to the processor and able to transmit thereto data read off the card. Moreover, the card reader 12 is also able to write data to a card which has been inserted in the slot.

The use of the device shown in Figure 1 will now be described with reference to Figure 2, which is a flow chart showing the progress of a transaction using the device.

In Figure 2, it is assumed that the user has a standard cash card, which can be used to make payments, and in other financial transactions, separately from a mobile phone, and that the user also has a mobile phone as shown in Figure 1, with a suitable slot for receipt of the card.

To begin the procedure, the user in step S11 inserts the card into the phone and, at step S12, dials a number (which may advantageously be pre-stored in the device) of his bank, or other financial services provider.

At step S13, an authorisation procedure is carried out in which the user is, for example, required to confirm that he is an authorised user of the device, for example by entering a PIN. Other security and authorisation checks are of course possible.

Once the bank has confirmed that the user is authorised, the user is presented with a choice of available services and, at step S14, he selects a cash loading service. Of course, this is only one example

of the type of service which might be available. In step S15, the cash loading takes place, in which the user specifies the number of an account which he holds with the financial services provider, and specifies an amount of cash, that amount then being transferred out of the relevant account, and on to the cash card in the form of stored value. At step S16, the process ends.

The card having been loaded with cash, it may then be used, for example, to make payments in a conventional way.

Figure 3 shows another form of financial transaction, in which a user transacts not with a financial services provider, but with another user of a similar service. Such another user is also referred to herein as a "financial transactor". In this case, the users are able to use a communications link between their mobile phones as a secure route for the transfer of value from one user to the other.

In such a case, it is necessary to establish a phone link between the two users A and B, and for both users to have their cash cards inserted into their phones. As shown in Figure 3, this exemplary process begins with user A inserting his card into his phone (step S21), and user B inserting his card into his phone (step S22). Then, user A initiates a call to user B (step S23), and user B answers the call (step S24). This is possible if, for example, users A and B are able to speak to one another and agree to begin the procedure in this way. However, if the users are able to communicate only over the phone, then the call can be placed before either of the parties, or at least before the called party, has inserted his card into the phone.

Once the phone connection has been established, user A, at step S25, selects a payment service and, at step S26, an authorisation procedure is carried out, in

which each card and phone device confirms to the other that it is genuine, for example by the transmission of secret keys which are built into cards by the card issuers.

Once authorisation has been established, user A (in this case) effects a payment to user B in step S27. For example, it is necessary for user A to identify the amount of the money which is to be transferred. This amount is then deducted from the value stored on his card, and added to the value stored on the card of user B. Once the transaction has been completed then, at steps S28, S29, each user can terminate the procedure by ending the phone call.

There are thus disclosed procedures by which a user of a phone can carry out a financial transaction, using a standard card, even though he is remote from card reading equipment provided by the card issuer.

CLAIMS

1. A method of loading electronic cash onto a card, the method comprising:

inserting a standard cash card into a suitable slot in a mobile communications device;

establishing a communications path between the mobile communications device and a financial services provider;

confirming by means of an authorisation procedure that a user of the device is authorised to perform transactions; and

transferring value from the financial services provider to the cash card, such that the cash card may subsequently be used in a transaction remote from the mobile communications device.

2. A method as claimed in claim 1, wherein the mobile communications device is a mobile phone, and the step of establishing a communications path uses a satellite or cellular phone network.

3. A mobile communications device, comprising a slot for insertion thereinto of a standard cash card, and means for transferring data to and from a card inserted into said slot.

4. A mobile communications device as claimed in claim 3, wherein the device is a satellite or cellular mobile phone.

5. A mobile communications device as claimed in claim 3, further comprising a smart card reader, for reading data from a card inserted into a slot therein.

6. A method of transferring electronic cash using a mobile communications device, the method comprising:

inserting a standard cash card, which is capable of use in transactions remote from the mobile communications device, into a suitable slot in the mobile communications device;

establishing a communications path between the mobile communications device and a financial transactor;

confirming by means of an authorisation procedure that a user of the device is authorised to perform transactions; and

transferring value between the financial transactor and the cash card.

7. A method as claimed in claim 6, wherein the financial transactor is another user, having a second mobile communications device with a second standard cash card inserted into a suitable slot therein.

8. A method as claimed in claim 6, wherein the mobile communications device is a mobile phone, and the step of establishing a communications path uses a satellite or cellular phone network.

9. In combination:

a cash card, comprising means for storing data representing a financial value, the card being capable of independent use as a payment means; and

a mobile communications device, comprising a slot for insertion thereinto of the cash card, and means for transferring data to and from the card inserted into said slot.

10 A combination as claimed in claim 9, wherein the mobile communications device is a satellite or cellular mobile phone.

11. A combination as claimed in claim 9, wherein the mobile communications device further comprises a smart card reader, for reading data from a card inserted into a slot therein.

Application No: GB 9904041.2 **Examiner:** Dr. Andrew Glanfield
Claims searched: 1-11 **Date of search:** 18 May 1999

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.Q): G4V (VAK)

Int Cl (Ed.6): G07F (7/08)

Other: ONLINE: EPODOC, JAPIO, WPI

Documents considered to be relevant:

Category	Identity of document and relevant passage		Relevant to claims
X	EP 0831438 A2	(HITACHI) see especially lines 9 to 25 of column 8.	1-6, 8-11
X	WO 97/04609 A1	(EII-KONSULTER) see whole document.	1-11
X	WO 96/32700 A1	(AU-SYSTEM) see especially page 3 lines 23-25 and page 5 lines 7-10.	1-6, 8-11

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.